

IN THE SPECIFICATION:

Please amend the following paragraphs as indicated:

[0019] Figure 1A illustrates a traditional electrospray configuration according to the prior art. As illustrated in Figure 1A, a traditional electrospray ion source (100) configuration includes a gas source (110) such as compressed nitrogen (N₂) and a sample material source (120) being fed directly to a plurality of platinum concentric needles (130). The gas source (110) forces a constant quantity per unit time of the sample material through the platinum concentric needles (130) producing a continuous flow of sample spray (150). A potential is then generated on a counter electrode (140) by a power supply (190) causing a continuous flow of electrospray ions (160) to be directed to a number of Einzel/ion lenses (170) and subsequently to a mass spectrometer (180).

[0032] Figure 4 further illustrates a number of components of a time-of-flight mass spectrometer (400) according to one exemplary embodiment. As illustrated in Figure 4, an exemplary time-of-flight mass spectrometer (400) includes an orifice (430) leading to a field-free drift region (410) and an ion detector (420). The field-free drift region (410) is an area within the time-of-flight mass spectrometer (400) where no external fields act upon received ions and they are allowed to freely drift to the ion detector (420). According to one exemplary embodiment, pulsed electrospray ions enter the mass spectrometer (400) through the orifice (430) where they are separated according to their mass-to-charge ratio in the field-free drift region (410). The ions continue on in the mass spectrometer (400). ~~The where the~~ ions with smaller mass-to-charge ratio ratios reach the ion detector (420) first. Once the ion detector (420) is reached, the ions are detected and analyzed according to mass.

[0039] As mentioned above, the small droplets of sample material (600) react to the above-mentioned voltage difference, causing them to be accelerated towards the Einzel/ion lenses (250) and the mass spectrometer (260). During this acceleration, an electrospray process occurs and the charged ions of the sample material are formed (step 530; Fig. 5). In further detail, the electrospray process begins with an accumulation of positively charged ions in the small droplets of sample material (600) causing surface instability. When the coulombic ~~repulsions, or~~ repulsion, i.e., the repulsion among similarly-charged particles ~~regions of a particle, that occurs~~ between the positively charged ions of the sample material (600) exceeds the surface tension of the sample material (600), smaller droplets will start to come off the surface of the liquid, forming a mist. As these droplets travel towards the counter electrode (240), a solvent portion of the sample material evaporates causing the droplets to shrink and, as a consequence, the distance between positive charges at the surface of the droplets become smaller and charge repulsion gets stronger. This process continues until the Coulombic repulsions are stronger than the surface tension of the droplet (a condition called the Rayleigh instability limit) causing the droplet to explode into smaller charged droplets of analyte molecules (610) ready to be analyzed in the mass spectrometer (260) as illustrated in Figure 6C. The above-mentioned electrospray process is more efficacious with smaller droplets of sample material. Consequently, the present system and method increase the efficiency of ionization.